NEW EXOTIC CRANE–FLIES (TIPULIDAE: DIPTERA) PART XXIV[1]

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The preceding part under this general title was published in Entomological News, vol. 84:23–31. The new species here described are from Thailand and South India, collected by the late Deed C. Thurman and by Dr. Fernand Schmid, to both of whom I express my deep thanks for their cooperation in making known the Oriental crane-fly fauna. I am providing figures of venation and the male hypopygium for various species of Oriental *Limnophila* that had not previously been illustrated, all materials being based on type specimens preserved in the Alexander Collection.

Dolichopeza (Mitopeza) trichochora, NEW SPECIES

General coloration of thorax orange and yellow; head chiefly brownish black, more or less pruinose; antennae of male elongate, about one-half the wing, flagellar segments long-cylindrical, with short erect setulae, major setae very sparse except on first segment; wings weakly suffused, prearcular and costal fields, together with the stigma, slightly darker; outer wing cells with strong black trichia; *Rs* short, transverse; cell M_1 sessile, cell *2nd A* relatively broad; male hypopygium with outer dististyle slightly expanded at near midlength, inner style with beak obtuse, simple; tergite produced into narrow lateral lobes, their mesal parts with short black spinoid setae.

MALE–Length about 7 mm.; wing 9 mm.; antenna about 4.3 mm.

Frontal prolongation of head short, medium brown; palpi brownish black. Antennae of male 12-segmented, elongate, nearly one-half the wing; scape and pedicel yellow, first flagellar segment obscure yellow basally, passing into brown, remaining segments brownish black; long-cylindrical, without basal enlargements, the segments progressively shorter outwardly, outer two subequal; all segments with abundant short erect setulae,

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first flagellar with sparse longer black verticils on upper surface, the remaining segments with a single such bristle beyond midlength. Front brownish yellow, anterior vertex obscure yellow, remainder of head brownish black, orbits more pruinose; anterior vertex broad, nearly equal to the exposed diameter of the eye.

Pronotum light yellow. Mesonotal praescutum with ground brownish orange, with four inconspicuous more yellowed stripes, centers of scutal lobes similarly yellowed; scutellum brownish yellow, parascutella and postnotum clearer yellow; mesonotum and pleura glabrous, the latter clear light yellow. Halteres long, black, base of stem yellow. Legs with coxae and trochanters light yellow; remainder of legs broken. Wings (Fig. 1) weakly suffused with brown, prearcular and costal regions, with the stigma, slightly darker; veins brown. Longitudinal veins beyond general level of cord with long trichia, with sparse scattered trichia on *Cu* and *1st A*, virtually lacking on *M* and *2nd A*. Strong black trichia in outer ends of cells R_3 to M_3, most numerous in cell R_5, sparse in medial cells (position indicated in figure by stippling). Venation: *Rs* short, transverse, nearly in alignment with other elements of the anterior cord; R_{1+2} preserved as a short spur, as shown; cell M_1 sessile; *m-cu* about one-half its length before fork of *M*; cell *2nd A* relatively broad.

Proximal abdominal tergites brownish yellow, posterior borders broadly darker brown, outer segments darker, sternites more uniformly pale. Male hypopygium (Fig. 7) with tergite, *t*, relatively small, including a narrow lateral lobe on either side, apex obtusely rounded, mesal portion with short black spinoid setae, more cephalad at base of lateral lobe with a small fingerlike lobule, directed slightly mesad and caudad. Outer dististyle, *d*, slightly expanded on outer margin at near midlength, style with abundant long black setae; inner style yellow, bilobed, the outer major lobe with the beak simple, obtuse, with sparse short setae, outer posterior portion or crest produced slightly into a point, the region with long yellow setae; inner lobe, representing the lower beak, somewhat smaller, pale yellow throughout, without major setae, at base with a microscopic lobule tipped with two strong setae.

HABITAT–India. Holotype: ♂, Perumalmalai, Madras, 5,500 feet, December 9, 1961 (Fernand Schmid).

The most similar species is *Dolichopeza (Mitopeza) amisca* Alexander, likewise from South India. This differs in the coloration and venation of the wings, including the very narrow cell *2nd A*, and in the much more restricted trichia in the wing cells. The hypopygium of the two species is generally similar, differing in the structure of the tergite and both dististyles. The venation and hypopygium of *amisca* have been described and illustrated in another paper by the writer (Philippine Jour. Sci., 90:166–167, fig. 2 (venation), fig. 40 (hypopygium); 1961).

Tipula (Tipulodina) thaiensis, NEW SPECIES

MALE–Length about 15 mm.; wing 15.5 mm.; antenna about 3.5 mm.

Generally similar to *gracillima*, differing expecially in all details of structure of the male hypopygium. Coloration of body, legs and wings virtually the same in both species.

Venation (Fig. 2) as compared with *gracillima* much the same, free tip of Sc_2 more basad, shorter than the section of vein R_1 beyond; no indication of vein R_{1+2}; in *gracillima*, as was indicated by Edwards, the condition is somewhat variable, the vein extremely short and sometimes absent. Male hypopygium (Fig. 8) with tergite, *t*, small, narrowed outwardly, posterior border with a U-shaped emargination, the smaller lateral lobes with about 15 very small apical setae, those of remainder of tergite much longer,

especially those near median area. Outer dististyle, *d*, clavate, outer end with very long pale setae; inner style as shown, the region of the beak dilated into an irregular blackened head, with relatively few setae; outer basal lobe a long-oval pale blade, subequal in length to the outer style. Eighth sternite, *s*, truncate, with a fringe of long pale setae, those of remainder of disk very short and dense; sternite dark brown, apical fourth conspicuously light yellow.

HABITAT–Thailand. Holotype: ♂, mounted on slide; Chiengmai, near Dr. Buker's Cabin, February 4, 1953 (Deed C. Thurman).

In the comparison with *gracillima* Brunetti, as above, attention is called to the venation especially of the radial field, with R_3 very long in both species, deflected caudad and ending just before the wing tip and lying very close to the margin. *T. (T.) amabilis* Alexander, of Java is intermediate between the two species above discussed and the numerous other members of the subgenus.

Pseudolimnophila (Pseudolimnophila) dravidica, NEW SPECIES

Mesonotum chestnut brown, mediotergite brownish black, pleura and pleurotergite brownish yellow; legs brown, claws of female very small, stout; wings light brown, stigma slightly darker, small; Sc_1 ending beyond midlength of the nearly straight R_{2+3+4}; veins beyond cord very long, cell R_2 at margin about two and one-half times cell R_3; cell *1st* M_2 small, inner end strongly pointed, cell M_1 very deep, about five times as long as its petiole; abdominal tergites dark brown, sternites light yellow.

FEMALE–Length about 8.5 mm.; wing 8 mm.

Head broken. Prothorax small, dark brown, especially anteriorly, pretergites light yellow. Mesonotal praescutum, scutum and scutellum chestnut brown, the first with indications of a narrow darker central stripe; pseudosutural foveae pale; mediotergite brownish black, sparsely pruinose; pleurotergite and pleura almost uniformly brownish yellow. Halteres brown, base of stem narrowly yellow. Legs with coxae and trochanters yellow; remainder of legs light brown, outer tarsal segments slightly darker brown; legs without interpolated linear scales as in *zelanica* and others; claw very small, with more than the basal half stout, apex a slender spine. Wings (Fig. 3) almost uniformly light brown, stigma small, slightly darker brown; veins dark brown. Longitudinal veins beyond general level of origin of *Rs* with conspicuous black trichia. Venation: *Sc* long, Sc_1 ending shortly beyond midlength of R_{2+3+4}, Sc_2 slightly removed, R_{2+3+4} long, nearly straight, about two-thirds *Rs*; longitudinal veins beyond cord very long, generally parallel to one another; outer end of vein R_3 deflected caudad so cell R_2 is about two and one-half times as extensive as cell R_3; cell *1st* M_2 small, its inner end strongly pointed; cell M_1 very deep, about five times its petiole; *m-cu* at or just before midlength of M_{3+4}.

Abdominal tergites dark brown, sternites light yellow. Ovipositor with both cerci and hypovalvae long and slender, the former slightly upcurved on outer third.

HABITAT–India. Holotype: ♀, Perumalmalai, Madras, 5,500 feet, December 9, 1961 (Fernand Schmid).

The most similar regional species is *Pseudolimnophila*

(Pseudolimnophila) productivena Alexander (Rec. Indian Mus., 50:354, fig. (venation); 1952) which differs evidently in the details of venation. The fly described as *Pseudolimnophila zelanica* Alexander, has the venation somewhat as in the present fly but is told readily by the leg vestiture, there being abundant interpolated linear scales between the normal setae. This species belongs in the genus *Limnophilaspis* Alexander (Ann. Mag. Nat. Hist. (12) 3:682; 1950) but the male sex still is unavailable. The venation of *P. zelanica* has been figured elsewhere (Philippine Jour. Sci., 86:427, fig. 16; 1957).

Pseudolimnophila (Pseudolimnophila) subhonesta, NEW SPECIES

General coloration of praescutum light brown, lateral margins paler; pleura more yellowish brown, darker dorsally and beneath; legs brown, claws very small; wings light brown, including the base, stigma darker brown; vein R_2 shortly beyond fork of R_{2+3+4} leaving a very short element R_{2+3}, cell R_3 at margin about two and one-half times as extensive as cell R_2; *m-cu* more than one-third its length beyond the fork of M.

FEMALE—Length about 9 mm.; wing 7 mm.

Head with rostrum and palpi brown, terminal segment of latter relatively slender, about one-half longer than the penultimate. Antennae with scape and pedicel dark brown, remainder broken. Head brownish gray behind.

Pronotum brown, cervical region slightly more yellowed. Mesonotal praescutum with disk virtually covered by three confluent light brown stripes, lateral borders paler, pseudosutural foveae brownish black; posterior sclerites of notum dark brown, vaguely pollinose; parascutella and pleurotergite more yellowed, sparsely pruinose. Pleura yellowish brown, sparsely pruinose, dorsopleural region and ventral sternopleurite darker. Halteres with stem obscure yellow, clearer basally, knob brown. Legs with coxae light yellow, trochanters darker yellow; remainder of legs brown, outer tarsal segments slightly darker; tibial spurs small; claws very small, curved into needlelike points. Wings (Fig. 4) light brown, including the base, stigma long-oval, darker brown; veins dark brown, trichia black. Trichia on longitudinal veins beyond general level of origin of *Rs*, lacking on *2nd A*. Venation: R_2 shortly beyond fork of R_{2+3+4}, leaving a very short element R_{2+3}; R_{1+2} about one-half longer than R_2; cell R_3 at margin about two and one-half times as extensive as cell R_2; cell M_1 lacking; *m-cu* more than one-third its length beyond the fork of M.

Abdomen broken beyond the third segment; basal tergites dark brown, sternites light yellow.

HABITAT—India. Holotype: a broken ♀, Velor, Madras, 1,500 feet, December 4, 1961 (Fernand Schmid).

The most similar species is *Pseudolimnophila (Pseudolimnophila) honesta* (Brunetti), distributed in India from Kumaon southward to South Coorg. This differs evidently in the venation of the radial field, especially the position of vein R_2 (Fig. 5).

Hexatoma (Eriocera) arcuaria, NEW SPECIES

Size small (wing of male to 7.5 mm); general coloration brownish black, mesonotum in cases with greenish reflections; antennae short, in male 6-segmented; halteres and legs black; wings strongly infuscated, without trichia in the cells; vein *Sc* ending before level of fork of *Rs*, R_{1+2} slightly longer than R_{2+3+4}; inner end of cell *1st* M_2 strongly arcuated.

MALE—Length about 7–8 mm; wing 7–7.5 mm; antenna about 1–1.1 mm.

Rostrum very small, brownish black; palpi elongate, black, slightly more than one-half the antennae. Antennae of male short, 6-segmented, black throughout; first flagellar segment more enlarged basally, nearly as long as the combined segments two and three, terminal segment long, about one-third longer than the penultimate; verticils of segments long and conspicuous, especially on outer ones where some slightly exceed the segments in length. Head dull brownish black; vertical tubercle low, rounded; anterior vertex with conspicuous porrect black setae.

Thoracic dorsum brownish black, mesonotum with greenish reflections, more evident in the holotype; surface of notum moderately nitidous. Halteres black. Legs with coxae brownish black, trochanters brownish yellow; femora light brown basally, the outer two-thirds and remainder of legs brownish black to black; claws of male very small. Wings (Fig. 6) strongly infuscated, somewhat more intense along costal border, stigma not differentiated; a paler streak in basal half of cell *1st A* adjoining the vein; veins dark brown. No trichia in wing cells, as in *rama*. Longitudinal veins with trichia basad to level of the arculus, on *2nd A* with a very few longer trichia at near midlength of vein. Venation: *Sc* ending a short distance before level of fork of *Rs*; R_{1+2} long, slightly exceeding R_{2+3+4}, R_{2+3} commonly longer than R_2; *Rs* about one-half longer than *R*; inner end of cell *1st* M_2 strongly arcuated, basad of fork of *Rs*; *m-cu* at near two-thirds the length of M_{3+4}.

Abdomen uniformly dull black.

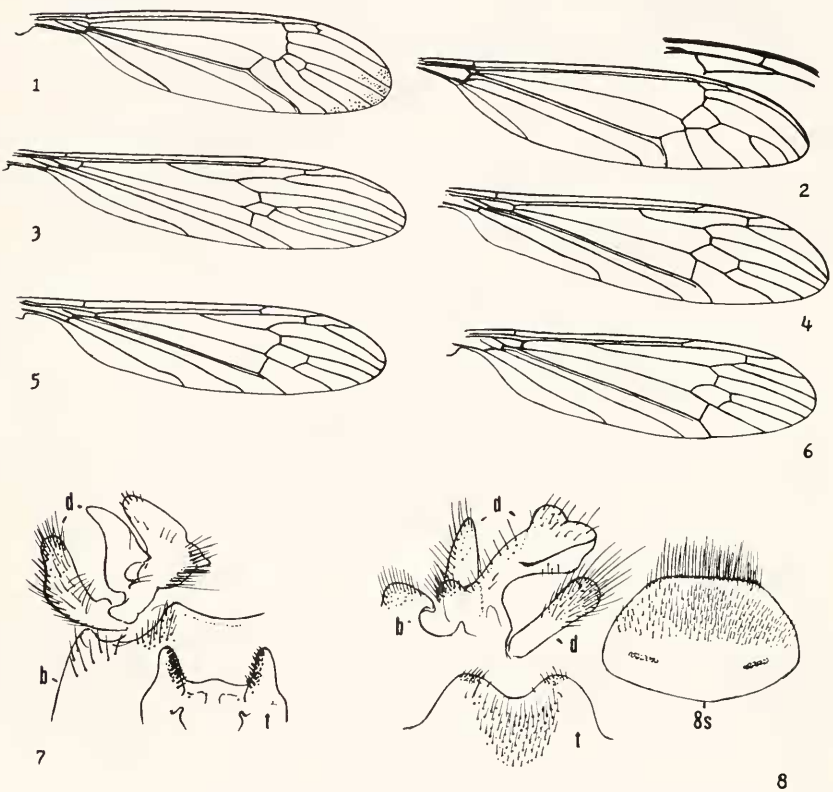
HABITAT—India. Holotype: ♂, Balamore, Madras, 1,500 feet, January 4, 1962 (Fernand Schmid). Paratypes, 3 ♂♂ (on two pins), Munnar, Kerala, 3,500 feet, December 15, 1961 (Fernand Schmid).

Among the numerous regional species in the genus the present fly in general appearance most resembles *Hexatoma (Eriocera) purpurata* Alexander and *H. (E.) rama* Alexander. The latter fly is quite distinct in the presence of macrotrichia in the outer wing cells while the somewhat larger *purpurata* has the male antennae 7-segmented and with the details of coloration and venation distinct.

Limnophila asura Alexander

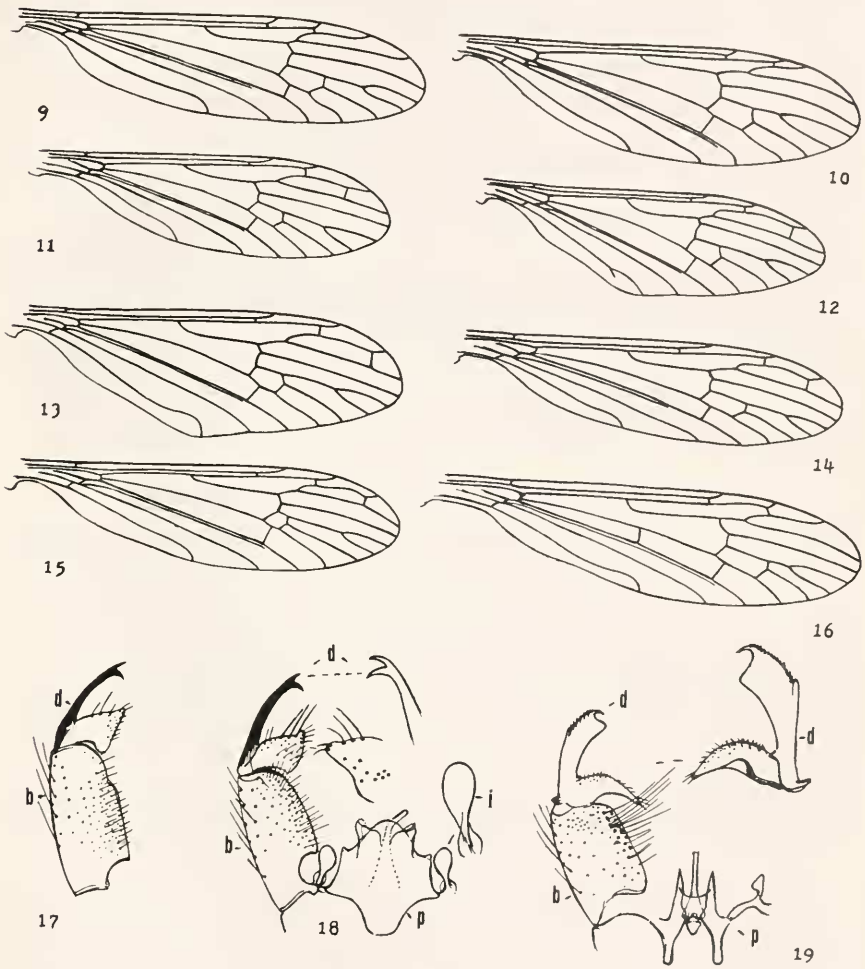
Limnophila asura Alexander; Ann. Mag. Nat. Hist. (12)9:46; 1956.

Type from Cherrapunji, Khasi Hills, Assam, India. Fig. 9 (venation). The subgenus of this fly is uncertain, perhaps in *Afrolimnophila*.



Explanation of Figures:

Figures 1-8 – Fig. 1, *Dolichopeza (Mitopeza) trichochora,* new species; venation. Fig. 2, *Tipula (Tipulodina) thaiensis,* new species; venation. Fig. 3, *Pseudolimnophila (Pseudolimnophila) dravidica,* new species; venation. Fig. 4, *Pseudolimnophila (Pseudolimnophila) subhonesta,* new species; venation. Fig. 5, *Pseudolimnophila (Pseudolimnophila) honesta* (Brunetti); venation. Fig. 6, *Hexatoma (Eriocera) arcuaria,* new species; venation. Fig. 7, *Dolichopeza (Mitopeza) trichochora,* new species; male hypopygium. Fig. 8, *Tipula (Tipulodina) thaiensis,* new species; male hypopygium. (Symbols: *b,* basistyle; *d,* dististyles; *s,* 8th sternite; *t,* 9th tergite.)



Figures 9-19 – Fig. 9, *Limnophila asura* Alexander; venation. Fig. 10, *Limnophila (Afrolimnophila) bicoloripes* Alexander; venation. Fig. 11, *Limnophila (Dicranophragma) analosuffusa* Alexander; venation. Fig. 12, *Limnophila (Dicranophragma) brachyclada* Alexander; venation. Fig. 13, *Limnophila (Dicranophragma) karma* Alexander; venation. Fig. 14, *Limnophila (Dicranophragma) kashongensis* Alexander; venation. Fig. 15, *Limnophila (Dicranophragma) palassoptera* Alexander; venation. Fig. 16, *Limnophila (Elaeophila) fumigata* Alexander; venation. Fig. 17, *Limnophila (Dicranophragma) karma* Alexander; male hypopygium. Fig. 18, *Limnophila (Dicranophragma) kashongensis* Alexander; male hypopygium. Fig. 19, *Limnophila (Elaeophila) fumigata* Alexander; male hypopygium. (Symbols: *b*, basistyle; *d*, dististyles; *i*, interbase; *p*, phallosome.

Limnophila (Afrolimnophila) bicoloripes Alexander

Limnophila (Afrolimnophila) bicoloripes Alexander; Ent. News, 75:63; 1964.

Type from Mapum, Manipur, Assam, India. Fig. 10 (venation).

Limnophila (Dicranophragma) analosuffusa Alexander

Limnophila (Dicranophragma) analosuffusa Alexander; Ent. News, 77:217; 1966.

Type from Sirhoi Kashong, Manipur, Assam, India, Fig. 11 (venation).

Limnophila (Dicranophragma) brachyclada Alexander

Limnophila (Dicranophragma) brachyclada Alexander; Ent. News, 79:245; 1968.

Type from Serrarim, Khasi-Jaintia Hills, Assam, India. Fig. 12 (venation).

Limnophila (Dicranophragma) karma Alexander

Limnophila (Dicranophragma) karma Alexander; Ent. News, 77:218; 1966.

Type from Tarak Tal, Pauri Garhwal, Kumaon, Uttar Pradesh, India. Fig. 13 (venation); Fig. 17 (male hypopygium).

Limnophila (Dicranophragma) kashongensis Alexander

Limnophila (Dicranophragma) kashongensis Alexander; Ent. News, 77:220; 1966.

Type from Sirhoi Kashong, Manipur, Assam, India, Fig. 14 (venation); Fig. 18 (male hypopygium).

Limnophila (Elaeophila) fumigata Alexander

Limnophila (Elaeophila) fumigata Alexander; Ent. News, 77:223; 1966.

Type from Sirhoi Kashong, Manipur, Assam, India. Fig. 16 (venation); Fig. 19 (male hypopygium).

ABSTRACT–Five new species of Oriental Tipulidae are described, these being *Dolichopeza (Mitopeza) trichochora, Pseudolimnophila (Pseudolimnophila) dravidica, P. (P.) subhonesta,* and *Hexatoma (Eriocera) arcuaria,* of South India, and *Tipula (Tipulodina) thaiensis,* of Thailand. In addition figures are provided for seven species of the Hexatomine genus *Limnophila* that had not been illustrated previously.